UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,413	07/17/2003	Yong-Sik Kwon	Q75934	9609

23373	7590	11/27/2006

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EXAMINER
TRAN, KHANH C

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 11/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/620,413	KWON ET AL.
	Examiner	Art Unit	
	Khanh Tran	2611	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 July 2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

        1.☒ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____ .

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Zhang et al. U.S. Patent 6,563,868 B1.

Regarding claim 1, FIG. 2 illustrates an adaptive equalizer according to Zhang et

al. invention.

In column 2 lines 20-55, the adaptive equalizer shown in FIG. 2 for a digital

communications receiver is provided having at least one equalizer filter stage with taps

that receive coefficients (e.g., complex coefficients) to be updated during successive

filter clock cycles. The adaptive equalizer further includes a processor is adapted to run

an algorithm to locate taps that correspond to echoes received by said digital

communications receiver. In column 5 lines 5-15, in one of the embodiments, Zhang et

al. teaches that a dedicated DSP microprocessor or a general purpose microprocessor

is used off-line to analyze the dominant multi-path echo pattern of the transmission

channel based on the received RF frequency spectrum. In view of that, the DSP

processor perform equivalent function of the claimed multi-path prediction unit.

Zhang does not teach a section setting unit as set forth in the application claim.

However, in column 2 lines 20-55, Zhang et al. discloses that the taps are selectively responsive to the processor, such that only those taps which correspond to received echoes are adjusted to update the coefficients associated therewith. Because the processor identify and select only those taps which correspond to received echoes, one of ordinary skill in the art would have recognized that the processor also performs equivalent function of the claimed section setting unit.

Zhang does not teach a repeat setting unit as set forth in the application claim.

In column 6 lines 35-45, Zhang et al. teaches that the adaptation is focused on a group of complex coefficients, which correspond to received echoes, and the error convergence is achieved within 300 iterations as shown in the example in FIG. 6, see column 5 lines 40-55. As recited above, because the taps are selectively responsive to the processor such that only those taps which correspond to received echoes are adjusted to update the coefficients associated and the process is iterated repeatedly, therefore, one of ordinary skill in art at the time the invention was made would have recognized that the processor sets the already identified taps repeatedly after each iteration. The act of updating coefficient taps iteratively corresponds to the claimed step of making the set predetermined section repetitive periodically.

In column 2 lines 20-30, the adaptive equalizer is provided which has at least one equalizer filter stage with taps that receive coefficients, such as complex coefficients, to be updated during successive filter clock cycles.

Regarding claim 2, as recited above, the processor update coefficient taps according to the operation characteristic of the filter stage.

Regarding claim 3, referring to FIG. 2, error E is calculated as result of the subtraction between slicer 24 and summation 22, which provides an output from the equalizer filter stage. The taps are updated based E; see column 1 lines 1-20.

Regarding claim 4, claim is rejected on the same ground as for claim 1 because of similar scope. Zhang et al further teach past decision output for post-cursor taps (DFE) as disclosed in column 6 lines 30-40.

Regarding claim 5, claim is rejected on the same ground as for claim 2 because of similar scope. Because of the addition of the past decision output for post-cursor taps (DFE), the processor update coefficient taps according to the operation characteristic of the received signal for pre-cursor taps (FFE) and the past decision output for post-cursor taps (DFE).

Regarding claim 6, claim is rejected on the same ground as for claim 3 because of similar scope. Because of the addition of the past decision output for post-cursor taps (DFE), the error E is calculated based on the received signal for pre-cursor taps (FFE) and the past decision output for post-cursor taps (DFE).

Regarding claim 7, as disclosed in column 6 lines 20-50, the adaptive equation is calculated based on the error output $E_n(k)$ at the symbol k, and $X_n(k)$ that is the received signal for pre-cursor taps (FFE) and the past decision output for post-cursor taps (DFE).

Regarding claim 8, claim is rejected on the same ground as for claim 7 because of similar scope.

Regarding claim 9, claim is rejected on the same ground as for claim 1 because of similar scope.

Regarding claim 10, claim is rejected on the same ground as for claim 2 because of similar scope.

Regarding claim 11, claim is rejected on the same ground as for claim 3 because of similar scope.

Regarding claim 12, claim is rejected on the same ground as for claim 8 because of similar scope.

Regarding claim 13, claim is rejected on the same ground as for claim 7 because of similar scope.

Regarding claim 14, claim is rejected on the same ground as for claim 8 because of similar scope.

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bouillet et al U.S. Patent 7,116,703 B2 discloses "Multipath Signal Strength Indicator".

Sha et al. U.S. Patent 3,716,807 B2 discloses "Recursive Automatic Equalizer And Method Of Operation Therefore".
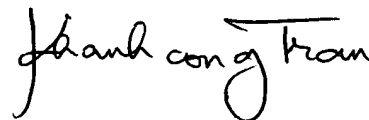

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCT

Khanh Tran
Primary Examiner